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10/579,892	01/23/2007	Jae-Young Ahn	123054-06063910	3485

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EXAMINER
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HUYNH, KHOA B

ART UNIT	PAPER NUMBER
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2416

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/579,892	<b>Applicant(s)</b> AHN ET AL.	
	<b>Examiner</b> KHOA HUYNH	<b>Art Unit</b> 2416	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 May 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>05/19/06, 01/23/07, 10/15/07, 05/06/09</u> .                  | 6) <input type="checkbox"/> Other: _____                          |



## DETAILED ACTION

### *Claim Objections*

1. Claim 8 is objected to because of the following informalities: “the resource subspace” in claim 8 is not supported by claim 1. Appropriate correction is required.

### *Claim Rejections - 35 USC § 101*

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. **Claims 1-14** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Based on Supreme Court precedent (*Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876)) and recent Federal Circuit decisions, a § 101 process must be tied to another statutory class or transform underlying subject matter to a different state or thing. Neither of these requirements is met by claims 1-14.
4. **Claims 1-14** recite multiple steps: partitioning, assigning, allocating, allowing... There is no apparatus positively recited to accomplish these steps. The transformation requirement is a physical transformation. Data transformation is not considered. Claims 1-14 clearly don't have a physical transformation.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. **Claims 1-2, 7-8** are rejected under 35 U.S.C. 102(b) as being anticipated by **Nadgauda, US 6,011,800**.

7. **For claim 1**, Nadgauda teaches: A method for partitioning resource spaces and assigning physical channels and power in an OFDMA (orthogonal frequency division multiple access)-based cellular system (**Nadgauda, column 3, lines 1-26, resource management techniques for use in various cellular system like TDMA, CDMA and other multiple access networks which includes OFDMA**), comprising:

(a) partitioning a resource within a slot into resource spaces, in common in a plurality of adjacent cells (**Nadgauda, fig 2, slot 250 is partitioned into resource spaces 252, 254; Nadgauda, column 4, lines 19-42, technique is performed on plurality of communication units in multiple cells/regions**);

(b) partitioning the partitioned resource spaces into resource sets according to respective sizes of physical channels in the adjacent cells (**Nadgauda, fig 2, resource space 252 is partitioned into resource sets 268, 270, 272, 274, 276, 278; Nadgauda,**

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**column 8, lines 7-36**, resource sets are partitioned according to size of physical channels);

and (c) assigning the physical channels classified based on characteristics to the partitioned resource sets within the resource space (**Nadgauda, fig 2**, physical channel 217 is assigned to resource set 270 based on its size) .

8. **For claim 2.** Nadgauda teaches: A method for partitioning resource spaces and assigning physical channels and power in an OFDMA (orthogonal frequency division multiple access)-based cellular system (orthogonal frequency division multiple access)-based cellular system (**Nadgauda, column 3, lines 1-26**, resource management techniques for use in various cellular system like TDMA, CDMA and other multiple access networks which includes OFDMA), comprising:

(a) partitioning a resource within a slot into resource spaces, in common in a plurality of adjacent cells (**Nadgauda, fig 2**, slot 250 is partitioned into resource spaces 252, 254; **Nadgauda, column 4, lines 19-42**, technique is performed on plurality of communication units in multiple cells/regions);

(b) partitioning the partitioned resource spaces into resource subspaces, in common in the adjacent cells (**Nadgauda, fig 2**, resource space 252 is partitioned into resource subspaces 256, 258; **Nadgauda, column 4, lines 19-42**, technique is performed on plurality of communication units in multiple cells/regions);

(c) partitioning the partitioned resource spaces and the resource subspaces into resource sets according to respective sizes of physical channels in the adjacent cells

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*(Nadgauda, fig 2, resource subspace 256 is partitioned into resource sets 268, 270; Nadgauda, column 8, lines 7-36, resource sets are partitioned according to size of physical channels);*

and (d) assigning the physical channels classified based on characteristics to the partitioned resource sets within the resource space and the resource subspace *(Nadgauda, fig 2, physical channel 217 is assigned to resource set 270 based on its size).*

9. **For claim 7.** Nadgauda teaches: The method of claim 1, wherein the subcarriers which constitute the resource space *(Nadgauda, fig 5, resource spaces 555 to 596 support carriers as shown in fig 3)* is configured by one or more subcarrier sets which covers at least one wide frequency band and has a predetermined spacing *(Nadgauda, fig 5, management unit 520 and assignment unit 530 configured the subcarrier sets which cover one wide frequency band 542 and has predetermined spacing).*

10. **For claim 8.** Nadgauda teaches: The method of claim 1, wherein the subcarriers, which constitute the resource space and the resource subspace *(Nadgauda, fig 5, resource spaces 555 to 596 support carriers as shown in fig 3)*, is configured by one or more subcarrier sets which covers at least one wide frequency band and has a predetermined spacing *(Nadgauda, fig 5, management unit 520 and assignment unit 530 configured the subcarrier sets which cover one wide frequency band 542 and has predetermined spacing).*

***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).



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14. **Claims 3-4** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Nadgauda, US 6,011,800** in view of **Terry, US 2001/0043576**.

15. **For claim 3**. Nadgauda teaches: The method of claim 1, wherein the resource space is partitioned so that

Nadgauda doesn't teach: a combination of the total or part of common channels, dedicated control channels, shared control channels, dedicated traffic channels, and shared traffic channels is allocated to a resource space.

Terry from the same or similar fields of endeavor teaches: a combination of the total or part of common channels, dedicated control channels, shared control channels, dedicated traffic channels, and shared traffic channels is allocated to a resource space (**Terry, fig 2, common channels, dedicated control channels, shared control channels, dedicated traffic channels, shared traffic channels are allocated to resource space channel 56**)

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Terry into Nadgauda, since Nadgauda suggests a technique for managing resource by assigning physical channels to resource spaces, and Terry suggests the beneficial use of assigning multiple logical channels to such physical channel since it is common practice in the art to associate physical channel/resource with logical channels of different types to better manage data (**Terry, page 2, paragraph 16**) in the analogous art of data transmission.

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16. **For claim 4.** Nadgauda teaches: The method of claim 2, wherein (b) comprises

Nadgauda doesn't teach: partitioning the resource space through which the common channels, the dedicated control channels, and the shared control channels of each cell into resource subspaces so that the channels with similar physical channel characteristics may be transmitted at a subspace

Terry from the same or similar fields of endeavor teaches: partitioning the resource space through which the common channels, the dedicated control channels, and the shared control channels of each cell into resource subspaces so that the channels with similar physical channel characteristics may be transmitted at a subspace (**Terry, fig 2**, common channels, dedicated control channels, shared control channels, dedicated traffic channels, shared traffic channels are allocated to resource space channel 56 based on similar characteristics)

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Terry into Nadgauda, since Nadgauda suggests a technique for managing resource by assigning physical channels to resource spaces, and Terry suggests the beneficial use of assigning multiple logical channels to such physical channel since it is common practice in the art to associate physical channel/resource with logical channels of different types to better manage data (**Terry, page 2, paragraph 16**) in the analogous art of data transmission.

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17. **Claims 9-10** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Nadgauda, US 6,011,800** in view of **Sawyer, US 5,634,195**.

18. **For claim 9**. Nadgauda teaches: The method of claim 1, comprising:

Nadgauda doesn't teach: allocating a transmit power of the resource space to a physical channel which uses a fixed transmit power from among the physical channels assigned to the resource set; and allocating a power within the maximum transmit power of the resource space to a physical channel which uses a variable transmit power from among the physical channels assigned to the resource set.

Sawyer from the same or similar fields of endeavor teaches: allocating a transmit power of the resource space to a physical channel which uses a fixed transmit power from among the physical channels assigned to the resource set (**Sawyer, column 12, lines 15-22, fixed output/transmit power is allocated to fixed radio channels**);

and allocating a power within the maximum transmit power of the resource space to a physical channel which uses a variable transmit power from among the physical channels assigned to the resource set (**Sawyer, column 12, lines 22-44, output/transmit power not exceed base maximum power level is allocated to variable power radio channels**)

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Sawyer into Nadgauda, since Nadgauda suggests a technique for managing resource by assigning physical channels to resource spaces, and Sawyer suggests the beneficial use of allocating fixed and

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variable power to optimize the power levels needed for good quality transmission and reception (**Sawyer, column 1, lines 55-64**) in the analogous art of data transmission.

19. **For claim 10.** Nadgauda teaches: The method of claim 2, comprising:

Nadgauda doesn't teach: allocating a transmit power of the resource subspace to a physical channel which uses a fixed transmit power from among the physical channels assigned to the resource set; and allocating a power within the maximum transmit power of the resource subspace to a physical channel which uses a variable transmit power from among the physical channels assigned to the resource set.

Sawyer from the same or similar fields of endeavor teaches: allocating a transmit power of the resource subspace to a physical channel which uses a fixed transmit power from among the physical channels assigned to the resource set (**Sawyer, column 12, lines 15-22, fixed output/transmit power is allocated to fixed radio channels**);

and allocating a power within the maximum transmit power of the resource subspace to a physical channel which uses a variable transmit power from among the physical channels assigned to the resource set set (**Sawyer, column 12, lines 22-44, output/transmit power not exceed base maximum power level is allocated to variable power radio channels**).

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Sawyer into Nadgauda, since Nadgauda suggests a technique for managing resource by assigning physical channels

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to resource spaces, and Sawyer suggests the beneficial use of allocating fixed and variable power to optimize the power levels needed for good quality transmission and reception (**Sawyer, column 1, lines 55-64**) in the analogous art of data transmission.

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20. **Claims 11-12** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Nadgauda, US 6,011,800** in view of **Sawyer, US 5,634,195** as applied to claim 9 above, and further in view of **Jacobsen, US 2005/0068916**.

21. **For claim 11.** Nadgauda and Sawyer teach: The method of claim 9, wherein the transmit power is allocated by

Nadgauda and Sawyer don't teach: considering cell sizes, interference of adjacent cells, and a required SNR (signal to noise ratio).

Jacobsen from the same or similar fields of endeavor teaches: considering cell sizes, interference of adjacent cells, and a required SNR (signal to noise ratio) (**Jacobsen, page 1, paragraph 12, transmit power is allocated based on cell sizes, interference, and SNR**).

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Jacobsen into Nadgauda and Sawyer, since Sawyer suggests a technique for allocating power to channels, and Jacobsen suggests the beneficial use of considering cell sizes, interference, and SNR

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when performing such allocation to reduce interference and support small cell sizes  
**(Jacobsen, page 1, paragraph 12)** in the analogous art of data transmission.

22. **For claim 12.** Nadgauda and Sawyer teach: The method of claim 9, wherein the maximum transmit power is allocated by

Nadgauda and Sawyer don't teach: considering cell sizes, interference of adjacent cells, and a required SNR (signal to noise ratio).

Jacobsen from the same or similar fields of endeavor teaches: considering cell sizes, interference of adjacent cells, and a required SNR (signal to noise ratio)  
**(Jacobsen, page 1, paragraph 12, transmit power is allocated based on cell sizes, interference, and SNR)**

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Jacobsen into Nadgauda and Sawyer, since Sawyer suggests a technique for allocating power to channels, and Jacobsen suggests the beneficial use of considering cell sizes, interference, and SNR when performing such allocation to reduce interference and support small cell sizes  
**(Jacobsen, page 1, paragraph 12)** in the analogous art of data transmission.

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23. **Claim 14** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Nadgauda, US 6,011,800** in view of **Sawyer, US 5,634,195** as applied to claim 10 above, and further in view of **Benveniste, US 5,787,352**.

24. **For claim 14.** Nadgauda and Sawyer teach: The method of claim 10,

Nadgauda and Sawyer don't teach: wherein a user who needs a high transmit power for each cell is allowed to use a traffic channel of the resource subspace with the allowed high transmit power.

Benveniste from the same or similar fields of endeavor teaches: wherein a user who needs a high transmit power for each cell is allowed to use a traffic channel of the resource subspace with the allowed high transmit power (***Benveniste, column 16, lines 3-11, high power user is allowed to use idle, low traffic channel with allowed high power***).

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Benveniste into Nadgauda and Sawyer, since Sawyer suggests a technique for allocating power to channels, and Benveniste suggests the beneficial use of allowing high power users to use low traffic channel to reduce the probability of adjacent-channel interference between neighbor cells (***Benveniste, column 16, lines 10-11***) in the analogous art of data transmission.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KHOA HUYNH whose telephone number is (571) 270-7185. The examiner can normally be reached on Monday - Thursday: 7:00 AM - 4:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, SEEMA RAO can be reached on (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kevin C. Harper/  
Primary Examiner, Art Unit 2416

/K. H./  
Examiner, Art Unit 2416